

# New Flexible FR Polyurethane Foams for Energy Absorption Applications, Phase I

Completed Technology Project (2012 - 2013)



## Project Introduction

Development of new polyurethane (PU) insulation foams through a non-toxic environmentally friendly composite approach. Target FR foams will exhibit high heat flow resistance as well as lower density than conventional PU. Foams involve synergism between novel phosphonate FRs and smoke suppression agents coupled with use of aerogel. Preliminary data show peak heat release rates reduced by 50% versus PU, smoke equal to PU and ignition times delayed from 25 to 143 seconds.


## Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Gordon Nelson and Associates	Lead Organization	Industry	Melbourne, Florida
Florida Institute of Technology	Supporting Organization	Academia	Melbourne, Florida
 Kennedy Space Center(KSC)	Supporting Organization	NASA Center	Kennedy Space Center, Florida

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## Primary U.S. Work Locations

Florida

## Project Transitions



**February 2012:** Project Start



**February 2013:** Closed out

### Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/140348>)

## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Organization:

Gordon Nelson and Associates

### Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

### Program Director:

Jason L Kessler

### Program Manager:

Carlos Torrez

### Principal Investigator:

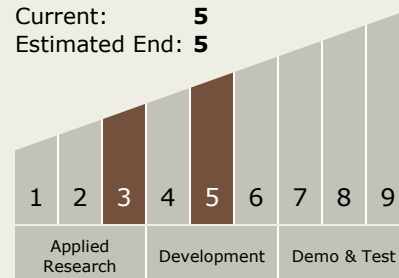
Feng Yang

## Technology Maturity (TRL)

Start: 3

Current: 5

Estimated End: 5



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## Technology Areas

### Primary:

- TX14 Thermal Management Systems
  - └ TX14.2 Thermal Control Components and Systems
    - └ TX14.2.4 Insulation and Interfaces

## Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System